

What is claimed is:

1. A water-based intermediate coating composition comprising a copolymer resin emulsion and a curing agent, the copolymer resin emulsion being emulsion-polymerized

5 from:

a monomer (a) comprising at least one monomer selected from (meth)acrylic acid alkyl esters, and further comprising, as is necessary, at least one monomer selected from the group consisting of styrene-based monomers, (meth)acrylonitrile,

10 and (meth)acrylamide;

an acid group-containing polymerizable unsaturated monomer (b);

a hydroxyl group-containing polymerizable unsaturated monomer (c); and

15 a cross-linkable monomer (d), wherein a glass transition temperature of said resin is in the range of -50° C to 20° C, an acid value of said resin is in the range of 2 to 60 mg KOH/g, and a hydroxyl value of said resin is in the range of 10 to 120 mg KOH/g.

20 2. The water-based intermediate coating composition according to claim 1, wherein said cross-linkable monomer (d) comprises at least one cross-linkable monomer selected from the group consisting of carbonyl group-containing polymerizable unsaturated monomers, hydrolyzable polymerizable silyl group-containing monomers, and polyfunctional vinyl monomers.

3. The water-based intermediate coating composition according to claim 1, comprising at least said carbonyl group-containing polymerizable unsaturated monomers as said cross-linkable monomer (d) and a hydrazine compound as a 5 cross-linking auxiliary agent.

4. The water-based intermediate coating composition according to claim 1, wherein said curing agent comprises at least one curing agent selected from the group consisting of melamine resins, isocyanate resins, oxazoline-based compounds, 10 and carbodiimide-based compounds.

5. The water-based intermediate coating composition according to claim 1, wherein said cross-linkable monomer (d) is used in an amount of 0.5 to 10% by weight, relative to the total amount of said monomers (a), (b), and (c).

15 6. The water-based intermediate coating composition according to claim 1, wherein said curing agent is contained in an amount of 2 to 50% by weight, relative to the total amount of solid content of said curing agent and said copolymer resin emulsion.

20 7. The water-based intermediate coating composition according to claim 1, further comprising a pigment-dispersed paste containing a pigment and a pigment dispersant.

8. The water-based intermediate coating composition according to claim 7, wherein 25 said pigment is contained in an amount of 10 to 60% by

weight, relative to the total amount of solid content of all resins contained in said water-based intermediate coating composition and said pigment, and

5 said pigment dispersant is contained in an amount of 0.5 to 10% by weight, relative to the amount of said pigment.

9. The water-based intermediate coating composition according to claim 7, wherein said pigment dispersant contains no or not more than 3% by weight of volatile basic substances, relative to the solid content of said pigment dispersant.

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10. A method for forming a multilayer coating film, comprising the steps of:

15 (1) coating an object to be coated with an electrodeposition coating material to form an electrodeposition coating film;

15 (2) applying a water-based intermediate coating composition on said electrodeposition coating film to form an intermediate coating film; and

20 (3) applying a top coating material on said intermediate coating film without curing said intermediate coating material to form a top coating film,

wherein said water-based intermediate coating composition is the water-based intermediate coating composition according to claim 1.

25 11. The method for forming a multilayer coating film

according to claim 10, wherein said intermediate coating film and said top coating film is cured simultaneously after said step (3).

12. The method for forming a multilayer coating film
5 according to claim 10, wherein said object to be coated is automobile body.

13. A multilayer coating film obtained by the method for forming a multilayer coating film according to claim 10.